

What is claimed is:

1. An electrochemical cell comprising an insulating substrate, at
5 least two conducting layers, and at least two insulating layers, wherein said at
least two conducting layers are separated by said insulating substrate or by at
least one of said insulating layers.

2. The electrochemical cell of claim 1, wherein said
10 electrochemical cell comprises two conducting layer and two insulating layers.

3. The electrochemical cell of claim 2, further including a third
conducting layer and a third insulating layer.

4. The electrochemical cell of claim 1, wherein at least one
15 conducting layer functions as a working electrode.

5. The electrochemical cell of claim 4, wherein said at least two
conducting layers function as working electrodes.
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6. The electrochemical cell of claim 5, wherein said working
electrodes are capable of determining the presence of, or the concentration
of, the same analyte.

7. The electrochemical cell of claim 5, wherein said working
25 electrodes are capable of determining the presence of, or the concentration
of, different analytes.

8. The electrochemical cell of claim 1, wherein at least one
30 conducting layer functions as a counter electrode.

9. The electrochemical cell of claim 1, wherein at least one
conducting layer functions as a reference electrode.

10. The electrochemical cell of claim 1, wherein at least one conducting layer functions as a dual-purpose reference/counter electrode

11. The electrochemical cell of claim 1, further having at least one
5 passage formed in each of the conducting layers and insulating layers, the passage capable of receiving a liquid sample.

12. The electrochemical cell of claim 11, said at least one passage
10 has a volume not exceeding 1 microliter.

13. The electrochemical cell of claim 11, wherein said passage has
a regular shape.

14. The electrochemical cell of claim 11, wherein said passage has
15 an irregular shape.

15. The electrochemical cell of claim 1, wherein said
electrochemical cell further includes at least one reagent in contact with at
least one conducting layer.

16. The electrochemical cell of claim 15, wherein said at least one
20 reagent is an enzyme.

17. The electrochemical cell of claim 15, wherein said at least one
25 reagent is integral with said at least one conducting layer.

18. The electrochemical cell of claim 1, wherein the thickness of
each conducting layer does not exceed 100 micrometers.

19. The electrochemical cell of claim 1, wherein the thickness of
30 each insulating layer does not exceed 100 micrometers.

20. The electrochemical cell of claim 1, wherein said at least two
conducting layers are separated by said insulating substrate.

21. The electrochemical cell of claim 1, wherein said at least two conducting layers are separated by at least one insulating layer.